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The Strategic Substitution of United States Foreign Aid

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I present a foreign policy decision-making theory that accounts for why US food aid is used strategically when other more powerful economic aid tools are at the disposal of policymakers. I focus my analysis on US food aid because this aid program provides an excellent case with which to test for the existence of foreign policy substitution. Substitution is an important assumption of many foreign policy theories yet proves to be an allusive empirical phenomenon to observe. Central to this analysis is the identification of legal mechanisms such as the ''needy people'' provision in the US foreign aid legislation that legally restrict certain types of aid; this mechanism, however, does allow for the allocation of certain types of foreign aid, such as food aid, to human rights abusing regimes. Thus, I test if food aid is used as a substitute for human rights abusing states while methodologically accounting for other aid options. The empirical results, estimated with a multinomial logit and Heckman model, demonstrate that countries with high levels of human rights abuse are (i) more likely to receive food aid and (ii) receive greater amounts of food aid even when controlling for other economic aid, the conditioning effect of strategic interests and humanitarian need over the period 1990–2004.

Introduction

To reduce food shortages abroad, US foreign policymakers can allocate food aid to countries with the most need. However, another option exists for policymakers; they can use food aid to further the strategic interests of the United States. Indeed, scholars researching the determinants of food aid have concluded that the disbursement of food aid, although driven in part by humanitarian concern, is used to help further the geopolitical interests of the United States (Wallerstein 1980; Ball and Johnson 1996; Zahariadis, Travis, and Ward 2000; Neumayer 2005).

[1] *Author's notes*: A much earlier version of this paper was presented at the annual meeting of the International Studies Association in Chicago, IL, on Friday March 2, 2007 (Fariss 2007a). This earlier version was awarded the 2008 Alexander George Graduate Student Paper Award from the Foreign Policy Analysis section of the International Studies Association and the 2007 Pender Award for Best Graduate Paper in Political Science from the University of North Texas. I also defended an earlier version of this paper as my Master's Thesis in August 2007 (Fariss 2007b). I am thankful for the advice and comments that I received from editors of *Foreign Policy Analysis*, several anonymous reviewers and the faculty and students of the Political Science Department at the University of North Texas; specifically, Jim Meernik and the students from his Spring 2006 Foreign Policy class in addition to Jim Battista, Andrew Enterline, Matt Eshbaugh-Soha, Michael Greig, Kimi King, Ko Maeda, Dave Mason, Liz Oldmixon, Idean Salehyan, Keith Schnakenberg and Steve Poe. Please direct all correspondences to cfariss@ucsd.edu. To access the data used in this project, please visit http://dvn.iq.harvard.edu/dvn/dv/CJFariss.

What these researchers have not adequately addressed is why food aid is used in this way if other more powerful economic aid tools are at the disposal of policymakers. One potential answer to this puzzle may be buried within the language of the US Foreign Assistance Act of 1961, which, under Section 116, specifies that foreign aid cannot be distributed to countries that engage ''in a consistent pattern of gross violations of internationally recognized human rights unless the aid is intended to help ''needy people'' (Committee on International Relations and Committee on Foreign Relations 2006: 73). Congress strengthened this provision in the 1970s with the passage of additional laws, which made the human rights provisions of the 1961 law binding, and by exercising greater oversight over the executive branchs distribution of foreign aid (Cingranelli and Pasquarello 1985; Forsythe 1995). While the ability of Congress to effectively oversee the vast and complex decision-making organization within United States Agency for International Development (USAID) is questionable (Forsythe 1995), the law has seemingly been effective in limiting the ability of policymakers when they distribute aid to certain countries some of the time.[2] While these scholars have accounted for the effect of human rights on total economic aid, military aid, and the combination of both, they have not yet unpacked the component parts of these aid programs.[3] An analysis of specific aid programs is necessary in order to determine which programs are affected by legal restrictions concerning human rights and which programs are not. Therefore, I focus on food aid as a potential substitute for other economic aid programs because of (i) the ''needy people'' exemption within the human rights language of the US Foreign Assistance Act and (ii) the existence of US sanctions, another type of legal mechanism that restricts the types of aid a country may receive.

If the US Foreign Assistance Act or sanctions restrict the use of certain economic aid programs then policymakers may consider food aid as a substitute. The panels in Figure 1 display simple comparisons of the yearly averages of all economic aid (other than food aid) and Figure 2 displays the amount of food aid for each level of human rights (as measured by the political terror scale, PTS).[4] The comparisons in Figure 2 reveal a relationship that is not apparent in Figure 1. For about half of the years in the time frame of this study, food aid is greater than all other types of economic aid for countries at the worst level of human rights (that is, the highest level of human rights violations). Similarly, the amount of food aid is greater than economic aid for sanctioned countries during several years within the time frame of the study. I systematically asses these relationships in the analysis below.

This research addresses the puzzle of why food aid is used strategically and in doing so, adds to the literature on human rights, foreign aid, and substitutability. It is the first to consider how legal mechanisms, that is, human rights and sanctions, affect the allocation of food aid while simultaneously accounting for other economic aid options both theoretically and empirically. It is also one of the few to disaggregate total economic aid in order to better understand the relationship of human rights and a specific aid program. Finally, US food aid provides an excellent case to test for the empirical existence of foreign policy substitution, which very often is an important component of many

[2] See Poe (1992), Poe and Sirirangsi (1994), Meernik, Krueger, and Poe (1998), Apodaca and Stohl (1999) and Lai (2003). For discussions concerning the development of this literature, see Poe (1990) and Neumayer (2003) and for discussions on the human rights literature in general, see Landman (2005), Hafner-Burton and Ron (2009) and Poe (2004).

[3] Recent work by Blanton (2000, 2005) and Miller (2004) are important exceptions; this work, however, deals with the sale of US armaments, which are not officially part of economic and military aid totals.

[4] All figures were produced in *R* (R Development Core Team 2009).

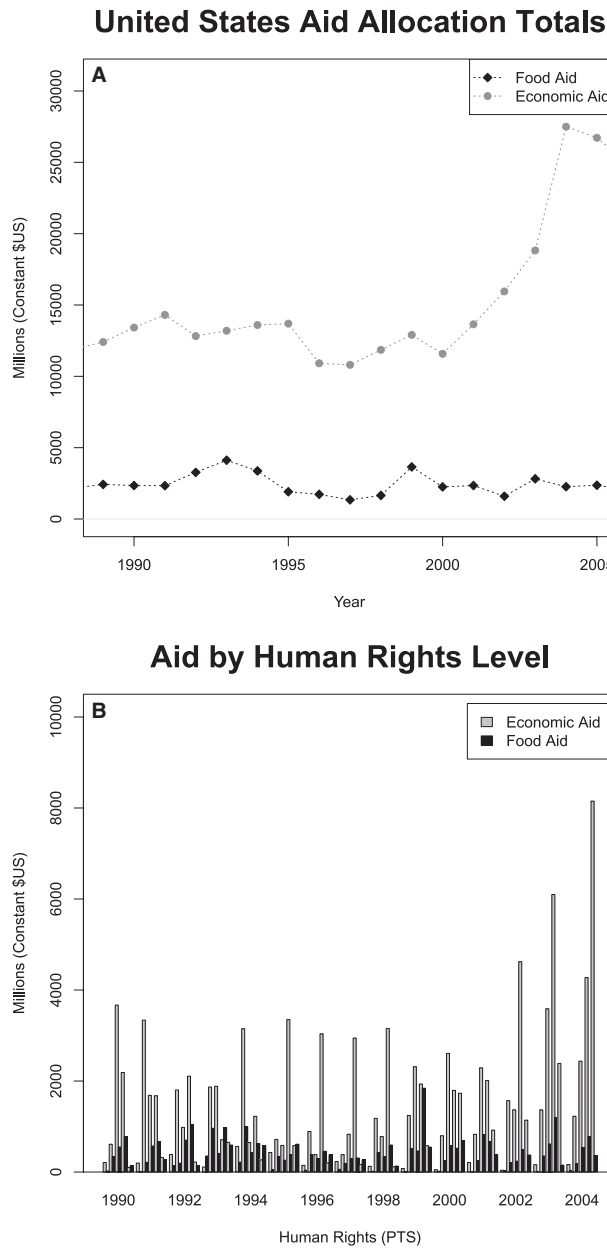

FIG 1. Yearly Totals of US Economic Aid (Gray) and Food Aid (Black) in Constant United States for All Recipient Countries (*Source*: USAID 2006)

foreign policy theories yet proves to be an allusive empirical phenomenon to observe.[5] To begin, I present the various strands of literature that inform my own theory building efforts. I then present the core hypotheses I use to test my theory followed by an overview of my research design and findings. I conclude with a discussion of the implications of my results.

[5] For further discussion, see Most and Starr (1984, 1989) (see also Bennett and Nordstrom 2000; Morgan and Palmer 2000; Palmer and Bhandari 2000; Regan 2000; Starr 2000; Palmer, Wohlander, and Morgan 2002).

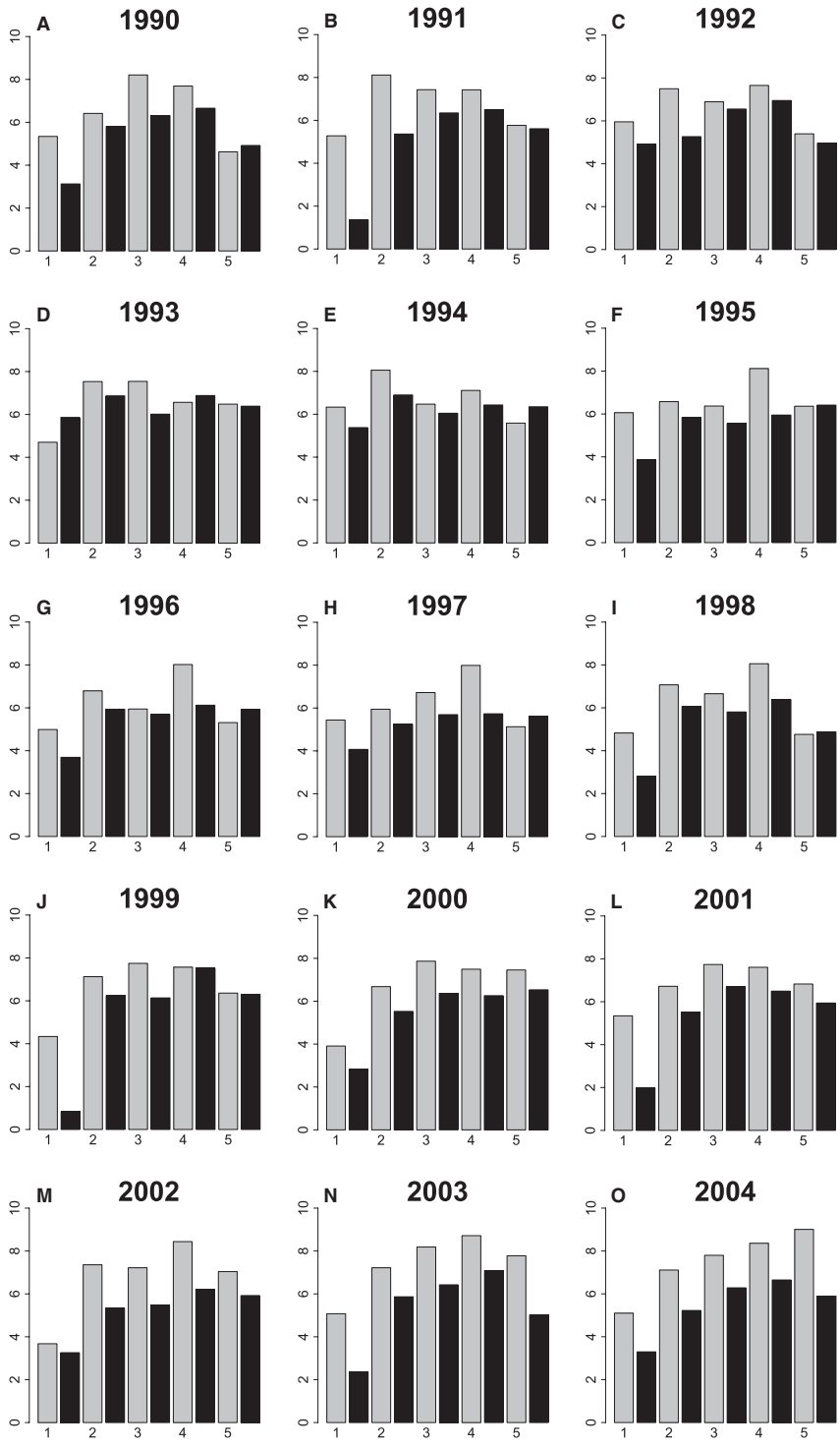

Fig 2. Yearly Totals of US Economic Aid (Gray) and Food Aid (Black) in Constant United States for All Recipient Countries at Each Level on the Political Terror Scale (Gibney et al. 2009) at Time $t-1$ where 1 is the Lowest Level of Violations and 5 is the Highest Level of Violations. The Natural Log of the Aid Totals is Taken for Ease of Comparison Across Years

Literature Review

Human Rights as a Condition on Foreign Aid

Over the past three decades, beginning with the seminal work of Schoultz (1981), scholars have sought to test the link between the stated importance of human rights by the US government and the actual US policy behavior. The work of Schoultz (1981) itself builds off earlier foreign aid research that, although not yet interested in human rights, attempted to understand the strategic and humanitarian determinants of US economic aid through multivariate analyses (Davenport 1969; Kato 1969; Kaplan 1975; McKinlay and Little 1977). In spite of the initial ground that this group of researchers made, subsequent work that examined the influence of human rights on foreign aid used less sophisticated bivariate correlation analyses (Schoultz 1981; Stohl, Carleton, and Johnson 1984; Carleton and Stohl 1985). The use of these less sophisticated methods led to serious criticism from Poe (1990, 1991b).

Cingranelli and Pasquarello (1985) were the first researchers to test the relationship of human rights on the use of foreign aid (both economic and military) by US policymakers with a fully specified multivariate model. They were also the first to theorize a two-stage decision-making process based on interviews conducted with a number of US foreign policymakers. The theory suggests that policymakers first select countries to receive aid before then allocating the aid to the pool of chosen recipients. This framework continues to inform the development of foreign policy research despite the criticism leveled at the results of the Cingranelli and Pasquarello (1985) study for dropping certain cases that, had they been included, would have substantially changed the conclusions rendered by the two researchers (McCormick and Mitchell 1988, see also Poe 1990, 1991b). Another criticism of this and other previous work was leveled by Lebovic, who stressed that total foreign aid is ''a crude aggregate and studies err when they indiscriminately treat it as a single entity and fail to consider differences in the purposes and impact of the aid programs involved'' (1988: 118).

For his study, Lebovic (1988) disaggregated US foreign aid by breaking up USAID programs into three dependent variables: overall assistance, economic assistance, and military assistance, where each is made up of four author-selected subprograms from the USAID program list. Despite the novel disaggregation of foreign aid subprograms into categories, Lebovic still utilizes similar dependent variables to those measured in other previous and subsequent research.

Most of the research that followed, continued to analyze the influence of human rights on the distribution of only the aggregate of total economic aid (Poe 1992; Poe and Sirirangsi 1994), military aid (Poe 1991a; Poe and Meernik 1995), or the combination or total of both (Blanton 1994; Poe, Pilatovsky, Miller, and Ogundele 1994; Meernik and Poe 1996; Meernik et al. 1998; Apodaca and Stohl 1999; Lai 2003). Other researchers have moved the spatial focus of their analyses beyond the shores of the United States to examine the foreign aid allocations of other developed countries in addition to the United States (Zanger 2000; Palmer et al. 2002; Neumayer 2003; Barratt 2004; Tuman and Ayoub 2004; Lebovic 2005; Carey 2007) and multilateral aid institutions (Neumayer 2003). Still other researchers have examined the impact of foreign aid and other foreign policy tools on the level of human rights violations in recipient countries (Regan 1995; Wood 2008) and the influence of US foreign policy on domestic decision-making at home (Rosenblum and Salehyan 2004; Salehyan and Rosenblum 2008; Rottman et al. 2009).

The record of this literature is quite impressive; to date, however, no attempt has been made to determine whether the effect of human rights varies across

different foreign aid programs subsumed under total economic or military aid. If the human rights record of a potential recipient county does restrict the types of aid received then the disaggregation of the components of US foreign aid is necessary in order to observe if human rights influenced substitution is indeed occurring. Thus, the legal constraints and exceptions (that is, the ''needy people provision'') within the US foreign aid legislation make food aid an excellent aid program to test for this substitution effect.

Food Aid as a Strategic Foreign Policy Tool

The food aid literature developed independently of the human rights literature and while it did not test for a link between human rights and food aid it did draw upon a few of the developments attributable to scholars working on questions concerning human rights and foreign aid. For example, Zahariadis et al. (2000) were the first food aid researchers to adopt the two-stage approach for analyzing foreign aid first put forth by Cingranelli and Pasquarello (1985). Other food aid researchers were informed by the work conducted on foreign aid by Meernik, Poe, and their co-authors, specifically relating to strategic interests during the Cold War, especially regarding US military aid and troop deployments (Zahariadis et al. 2000; Neumayer 2005). Thus, scholars working within the food aid literature have consistently concluded that this form of aid is used to help further the strategic interests of the United States (Wallerstein 1980; Ball and Johnson 1996; Zahariadis et al. 2000; Neumayer 2005).

While food aid is utilized for a variety of reasons, both humanitarian and strategic, no researcher has yet to empirically capture the full range of aid options available to policymakers. That is, if foreign aid is a means to a foreign policy end then the analysis of any component part must include relevant alternative policy options (Most and Starr 1984, 1989; Bennett and Nordstrom 2000; Morgan and Palmer 2000; Palmer and Bhandari 2000; Regan 2000; Starr 2000; Palmer et al. 2002). To be fair, I argue that food aid is substitutable by foreign policymakers when other economic aid programs are legally restricted, which is not an argument made by any scholar working within the food aid literature. However, several of these studies do implicitly employ the logic of substitutability within the US food aid program. For example, Ball and Johnson (1996) and Zahariadis et al. (2000) break down food aid in order to identify the varying effect of humanitarian and strategic determinants on each food subprogram, while others have empirically accounted for the amount of US military aid in their studies (Zahariadis et al. 2000; Neumayer 2005). Nonetheless, as the logic of substitutability implies, if some range of behaviors were all substitutable means for achieving some foreign policy outcome, then the whole range would need to be included (Starr 2000: 129; see also Most and Starr 1984, 1989). Thus, in order to address the puzzle of why food aid is used strategically when other more powerful economic tools are at the disposal of foreign policymakers it is necessary to account for this form of aid within the broader set of foreign aid options.

Overall, these literatures demonstrate that the distribution of US foreign aid generally adheres to the legislative criteria mandated by Congress. However, total economic aid, which is in part made up of food aid, is still often distributed to states with poor human rights records and food aid, an aid program with clear humanitarian objectives, is still used to further the geopolitical goals of the United States. In the next section of this paper I offer an explanation for these findings that further integrates these groups of research together by unpacking food aid from total economic aid while still theoretically and empirically accounting for the remaining economic aid programs.

A Theory of Food Aid Substitution

In order to build a theory of food aid substitution it is first necessary to discuss the type of decision-making environment in which US foreign policymakers render decisions. Sprout and Sprout (1968) define decision makers as imbedded within a political environment, or milieu. The milieu first, defines the opportunities that are available to the actor and second, affects the probabilities that they will choose particular policy options over others. For these policymakers, the opportunities or list of menu options vary within two inter-related sets of policy options (Russett 1972: 112–113; see also, Most and Starr 1989: 28–34, 134; Poe 2004: 17–19). One of these sets of policy options is the well-known two-stage selection and allocation process. During the first stage, the decision makers' options include the choice of selecting or not selecting a country to receive food aid followed by the second stage of allocating an amount of total food aid to those countries selected. The other set of decisions available to policymakers is the ability to substitute food aid for some other foreign aid program.

Cingranelli and Pasquarello (1985: 540) were the first scholars to suggest a two-step foreign aid decision-making process after conducting interviews with relevant foreign policymakers, which included members of congressional committees, committee staff members, occupants of pertinent roles in the Agency for International Development, and the Department of State many of whom stressed that decisions concerning US foreign assistance were made in two stages. In the initial stage, US policymakers performed a function analogous to gate keeping; some countries were systematically excluded from the recipient pool, while others were passed on to the second stage of the decision process. In the second stage policymakers interacted to decide the level of assistance to be provided.

At both stages of the process, US foreign policymakers are charged with applying laws relating to humanitarian criteria that restrict the distribution of certain types of aid to countries with poor human rights records. However, US foreign policymakers have the option of distributing certain types of aid to repressive countries if that aid is designed to directly assist ''needy people.''[6] Because of the presence of the 1961 Foreign Assistance Act, US foreign policymakers have their opportunities or list of menu options restricted based upon the human rights conditions in each individual country. Regardless of the human rights conditions on the ground, however, the ''needy people'' provision keeps some aid options open for use by policymakers, specifically food aid.

The existence of this provision is of particular theoretical importance because foreign policymakers maintain the latitude to legally select states for food aid with poor records of respecting human rights. With this aid option available for use, policymakers may strategically select and allocate food aid to countries with the worst human rights records as a substitute because they are legally restricted from using most other economic aid packages. Therefore, countries with poor human rights should have a greater probability of being selected to receive food aid and should also receive greater amounts of food aid when compared with other countries with better human rights practices.

[6] According to Section 116 of the Foreign Assistance Act of 1961 economic assistance cannot be provided to any country which engages in a consistent pattern of gross violations of internationally recognized human rights, including torture or cruel, inhuman, or degrading treatment or punishment, prolonged detention without charges, causing the disappearance of persons by the abduction and clandestine detention of those persons, or other flagrant denial of the right to life, liberty, and the security of person, unless such assistance will directly benefit the needy people in such country (Committee on International Relations and Committee on Foreign Relations 2006: 73). For a more complete discussion of this law and other laws relating to US foreign assistance, see Forsythe (1987, 1995).

Hypothesis 1a: *US foreign policymakers are more likely to select a recipient country with poor human rights practices for food aid than a recipient country with good human rights practices,* ceteris paribus.

Hypothesis 1b: *US foreign policymakers will allocate more food aid to a recipient country with poor human rights practices than to a recipient country with good human rights practices,* ceteris paribus.

By comparing two countries, one with a poor human rights record and the other with a good human rights record, it is not entirely clear that US foreign policymakers would have an interest in helping the former with food aid more than the latter because not all countries are of strategic importance to the United States. If however, these two hypothetical countries are of similar strategic importance, then US foreign policymakers may want to help both countries equally. Despite this interest, however, US law may limit many of the foreign aid menu options available for the strategically important state with a poor human rights record. Thus, to compensate for this lack of available aid options, foreign policymakers may have a greater probability of selecting this hypothetical state and allocate more food aid than the strategically important state with the better rights record, which is legally eligible for many other types of foreign aid.

Hypothesis 2a: *US foreign policymakers are more likely to select a strategically important recipient country with poor human rights practices for receipt of food aid than a strategically important recipient country with good human rights practices,* ceteris paribus.

Hypothesis 2b: *US foreign policymakers will allocate more food aid to a strategically important recipient country with poor human rights practices than to a strategically important recipient country with good human rights practices,* ceteris paribus.

Under the same logic of foreign aid substitutability, countries that are sanctioned by the United States may also receive greater amounts of food aid because many foreign aid options are not available for policymakers to use with these countries. Sanctions are similar to the human rights language within the US foreign aid legislation because they are another type of legal mechanism that is designed to restrict the economic relationship between the United States and the affected country, which, as a consequence, restricts policy options of foreign policy decision makers. Information on sanctions, available to policymakers within their decision-making environment, provides a clear policy position towards a potential recipient country. Sanctions generally target trade between the recipient country and the United States with specific requirements for that country to fulfill before trade will resume. Building on this logic, Rosenblum and Salehyan (2004) describe sanctions as evidence of a negative relationship between the United States and the targeted state.[7]

Once sanctions are in place, policymakers have fewer aid options available for an effected country because of the restrictions that sanctions impose. Sanctions not only constrain foreign aid options they also indicate a clear strategic interest for the United States with a target country. By their very definition, sanctions both restrict foreign policymakers' menu options and signify a strategic interest of the United States. For example, North Korea is of strategic importance to the United States but the legal restrictions of the sanction programs imposed by the United States restrict foreign policymakers from the use

[7] On the political uses of sanctions, see Galtung (1967), Hoffmann (1967), Morgan and Schwebach (1997), Drury (2001), Marinov (2005), Cox and Drury (2006), Hafner-Burton and Montgomery (2006), Lindsay (2006) and Wood (2008). On the use of sanctions as cues for US decision makers, see Rosenblum and Salehyan (2004) and also Rottman, Fariss, and Poe (2009) and Salehyan and Rosenblum (2008).

of many different aid options. Food aid is thus a strategically important foreign policy tool that has been well used for the North Korean case. However, the impoverished population of North Korea is often on the verge of humanitarian crisis, which requires the use of food aid for purely humanitarian reasons. Therefore, the presence of US sanctions may simply indicate the potential for a humanitarian crisis to occur. There are also several countries that are sanctioned and of obvious strategic interest to the United States but receive virtually no foreign aid (for example, Cuba and Iran). Despite the alternative explanation of sanctions as simply a humanitarian determinant and the existence of potentially confounding cases, sanctions fits logically into the substitution framework outlined above.

> **Hypothesis 3a:** *US foreign policymakers are more likely to select a recipient country for food aid with US sanctions imposed upon it than a country without sanctions,* ceteris paribus.

> **Hypothesis 3b:** *US foreign policymakers will allocate more food aid to a recipient country with US sanctions imposed upon it than to a country without sanctions,* ceteris paribus.

My theory is built on two assumptions about the decision-making behavior of US foreign policy officials. The first assumption is that the distribution decisions for foreign aid generally and food aid specifically are made within a two-stage decision-making process as originally argued by Cingranelli and Pasquarello (1985). The second assumption is that the component programs of foreign aid, including food aid can be substituted for other foreign aid programs. Food aid thus provides an excellent test for the hypotheses derived from my theory because of the legal mechanisms, which I argue constrain decision-making behavior. In the next section I outline the research design used to asses the hypotheses outlined above.

Research Design

To test my hypotheses, I utilize a pooled cross-sectional time-series design with country-year as the unit of analysis for all countries from 1990 to 2004. I test my hypotheses in two distinct models. In the first model (substitution model) I focus exclusively on the selection of food aid recipient countries in order to explicitly account for the substitution effect described in the theory section. In the second model (two-stage model) I focus on the two-stage decision-making assumption of my theory. In both models no country-year is arbitrarily censored from the analysis because decision makers must first consider all countries for selection and then allocate aid to the selected pool of recipient countries. In the allocation stage of the two-stage model, only countries that actually receive food aid are used and all other countries are censored. Before describing the estimation techniques for these two models, I first define the dependent variables for the two models and then introduce the independent and control variables that are included in both models.

Dependent Variable Food Aid

Food aid is currently distributed under the authorization of five separate programs, which are comprised of the current legislative programs of PL-480 and Section 416(b). These five programs, The Commodity Credit Corporation Food for Progress, Title I, Title II, Title III, and the McGovern Dole Global Food for Education (formally Food for Education) are totaled together and used as one dependent food aid variable. Foreign aid program data are available from

USAID, which either funds or implements all US food aid programs (USAID 2006).

In order to consistently compare all monetary amounts with the dependent variable food aid I have converted all monetary amounts into constant dollars (2004 $US). To convert (inflate or deflate) dollars I used the Chain-type Price Index available from the Bureau of Economic Analysis (United States Department of Commerce 2009). I do not break up food aid into its subcomponents at this time because the Committee on International Relations and Committee on Foreign Relations (2006) offer no distinction between the various food aid programs that US policymakers can reference when allocating aid based on the ''needy people'' provision.

For the first model I am conceptually interested in capturing the selection of potential recipient countries for food aid while simultaneously accounting for countries that also receive other economic aid programs. Therefore, instead of considering the selection stage as a binary choice (that is, food aid or no food aid), I have created an unordered categorical dependent variable with the available information from the USAID program funds for food aid and all other economic aid. This dependent variable takes on a value of 0 for each country-year in which that country receives neither food aid nor any other economic aid ($N = 581$). The variable takes on a value of 1 when a country receives food aid but not economic aid ($N = 42$). The variable takes on a value of 2 when a country receives economic aid but no food aid ($N = 873$). Last, the variable takes on a value of 3 when a country receives both food aid and economic aid ($N = 1{,}035$).

For the two-stage model, the dependent variable food aid takes on a different functional form for each stage of the two-stage analysis, a binary variable (no aid = 0 and any other amount of aid = 1) for the selection stage ($N = 2{,}531$) and the natural log of the continuous amount of aid for the allocation stage ($N = 1{,}077$). The two dependent variables in this model do not explicitly account for the other economic aid options available to policymakers, as does the categorical food aid variable described above. Therefore, to account for these other economic aid options I include a variable for all other US economic aid allotments in this model. Other Economic Aid (ln) is the natural log of the total of the continuous amount of all other US economic aid programs. This variable enters both stages of the two-stage model in a non-lagged version because, as my theory suggests, policymakers are actively engaged in a process of substituting different aid types and tailoring varying amounts of aid for each aid recipient. Therefore, it is likely that the decisions regarding other economic aid programs are made during the same budget-year as decisions regarding food aid.[8] Foreign aid program information and data are available from USAID (2006).

Independent Variables

In order to test H1 (*human rights*) I utilize the PTS data originally coded by Carleton and Stohl (1985) and Gibney and Stohl (1988) and now available from Gibney, Cornett, and Wood (2009). The PTS data are coded from human rights reports published annually by both the US Department of State and Amnesty International. I only utilize the PTS scale based on the Amnesty International reports in order to avoid any possible biases that may exist within the US Department of State reports.[9] If Amnesty International does not report on a specific

[8] The lagged version of this variable was also included in several iterations of the model; however, no changes to the results obtained

[9] For a discussion of how these two sets of reports vary over time, see Poe, Carey, and Vazquez (2001).

country then I follow Poe, Rost, and Carey (2006) and substitute the corresponding value from the US State Department.[10] The content of these reports are organized into a five-part ordinal scale, where a 1 identifies countries under a secure rule of law, where physical integrity violations like imprisonment, torture, murder, and execution do not occur (for example, Costa Rica). Countries placed in category five are those in which such abuses are a common part of life, affecting all segments of the population (for example, Burundi). The remaining categories, 2–4, represent varying degrees between these two extremes (Gastil 1980; Poe and Sirirangsi 1993; Poe and Tate 1994; Gibney and Dalton 1996; Poe, Tate, and Keith 1999). This variable is lagged 1 year in order to simulate availability of this information for policymakers.

To test H2 (*conditional human rights*) I interact the human rights variable above with a measure of US strategic interest. In order to proxy the strategic interest of the United States and because additional military aid options exist for US foreign policymakers as they select and allocate food aid, I utilize US military aid allotments to measure US strategic interests. Despite the end of the cold war, military aid remains an important gauge of US strategic interests, especially regarding foreign aid use (Poe and Meernik 1995; Meernik et al. 1998; Lai 2003). Military Aid (ln) is the natural log of the continuous amount of US military aid. This variable enters both models and both stages of the two-stage model in a non-lagged version because, as my theory suggests, policymakers are actively engaged in a process of substituting different aid types and tailoring varying amounts of aid for each aid recipient. Therefore, it is likely that the decisions regarding military aid are made during the same budget-year as decisions regarding food aid and other economic aid.[11] Foreign aid program information and data are available from the USAID (2006).

To test H3 (*sanctions*) I use information gathered from the Institute for International Economics (2009). I follow Rosenblum and Salehyan (2004) and code sanctions as 1 for each country that is the target of US sanctions in a given year (for example, Sudan); all other countries are coded 0 (see also Wood 2008). This variable is lagged one year in order to simulate availability of this information for policymakers.

Control Variables

Before the food aid allocation process can begin US foreign policymakers must select an appropriate pool of recipient countries where food aid has the potential to achieve its humanitarian objective of relieving hunger or in cases of strategic interest, where food aid is to be of some use to the recipient government or of use to some US interest on the ground. Both need-based and political determinants have been shown to inform policymakers as they select recipient countries for food aid during the first stage of the process and allocate that aid during the second stage. Thus, based on previous research, I control for the following additional variables in both models and during both stages of the two-stage model unless otherwise noted:

[10] I have selected the Amnesty International scores for my analysis to avoid any biases that using the State Department scores might introduce into the model given that the State Department scores were originally developed as means to ensure that US aid was not going to countries with poor human rights. Practically however, there is very little difference between these scores; moreover, many of the strategically motivated biases between the scores disappear by the first year of my study (Poe et al. 2001). I ran several tests on alternatively specified models using the State Department Score and the average of the Amnesty and State Department scores. These tests produced substantively similar results.

[11] The lagged version of this variable was also included in several iterations of the model; however, no changes to the substantive effects of it or any of the other independent variables occurred.

Food Production—Food or cereal production provides US policymakers with the ability to determine the need for food aid in potential recipient countries abroad. Data on the level of cereal production are taken from the World Bank (2009) and refers to crops harvested as dry grain (Ball and Johnson 1996; Barrett and Heisey 2002). Cereal production is measured by first converting the amount of cereal produced by a country from metric tons into kilograms, a number more appropriate for gauging individual usage and is then divided by the total population. The cereal production per capita variable is lagged 1 year in order to simulate availability of this information for policymakers. Finally, the natural log of this measure is used in order to decrease the effects of outliers and conform to the linearity assumption of the statistical model (Greene 2000: 214).

Drought—Humanitarian need for subsistence level aid also exists when the food production in a potential recipient country is drastically diminished by drought. A country experiencing a drought may not be able to produce enough food domestically for its population and policymakers are likely to react with the provision of food aid. Drought is coded 1 for each country each year that experiences this condition and 0 for all other country-years (EM-DAT 2009; see also Drury, Olson, and Van Belle 2005).

Purchasing Power—In addition to lack of production capacity another source of information relevant to US foreign policymakers is the relative ability of individuals within a country to purchase food in the marketplace (Neumayer 2003, 2005). Data on GDP per capita are used to proxy for Purchasing Power of the citizens of each potential recipient country and are also taken from the World Bank (2009). This variable is lagged 1 year in order to simulate availability of this information for policymakers. The natural log of this measure is also used.

Domestic Interests—US foreign policymakers must also consider domestic-level economic self-interests and supply availability when selecting potential recipient countries, since most of the actual food aid sent abroad is produced domestically.[12] Food aid is beneficial to US exporters—especially exporters of food—because it decreases the available supply of food in more profitable markets. This in turn drives up the price of the exporters' goods and also creates potential new markets for domestic producers' food products where the food aid is sent abroad (Ball and Johnson 1996; Diven 2001; Barrett and Heisey 2002; Neumayer 2005). In addition, domestic economic interests, especially those involved in the economics of food (for example, production, transportation, and storage), have considerable interest in the use of food aid by the US government (Diven 2001). Thus, cereal exports from the United States are used to control for the relative importance and visibility of domestic political and economic interests and their influence within US foreign policymakers decision-making environment (Ball and Johnson 1996; Diven 2001; Barrett and Heisey 2002; Neumayer 2005). This variable effectively controls for the supply of cereal produced in the United States in a given year. This variable is lagged 1 year and the natural log of this measure is also used. Data on US cereal trade exports are taken from the US Department of Commerce, which are made available by TradeStats Express (United States Department of Commerce 2009).

Population—Policymakers will allocate more aid to countries with larger populations relative to smaller populations, all else equal, simply because a greater number of individuals within a large country will be affected by food shortages than individuals within a small country (Neumayer 2003, 2005). Data on population are available from the World Bank (2009). This variable is lagged 1 year and the natural log of this measure is also used. Consistent with previous literature, this variable is only used in the allocation stage equation of the two-stage

[12] See Diven (2001, 2006) for a discussion of the domestic institutions and decision-making behaviors that drive the distribution of food aid abroad.

model and is not included in the substitution model because this variable is included to control for variation in the amount of aid a recipient country receives.

Previous Food Aid—The policy decisions from the previous year are a salient part of decision-making environment for the current year.[13] ''Indeed, last years food aid receipt volume proves the single best predictor of this years food aid flows'' (Barrett and Heisey 2002: 486; see also Lai 2003; Carey 2007) and is of clear substantive importance to any food aid model. Thus, the more food aid a country received in the previous year the more food aid that country will receive in the current year, all else equal. This variable is a lagged version of the dependent variable that is used in the substitution model and the allocation stage of the two-stage model. The use of this variable should have the net effect of making the estimates from the substitution model and the allocation stage of the two-stage model more conservative because of the substantial variance in the dependent variable that this variable explains.[14]

Method

In keeping with other studies that have sought to identify a substitution effect in various foreign policy outputs (Bennett and Nordstrom 2000; Regan 2000; Starr 2000), I utilize a multinomial logit equation with the unordered categorical dependent variable (also known as a polychotomous variable) described above. The multinomial logit model allows for the estimation of the probability of the four unordered categories of the dependent variable (no aid, food aid only, other economic aid only, food and other economic aid) given a set of independent variables.[15] The model can be thought of as simultaneously estimating binary logits for all comparisons among alternatives (Long and Freese 2006: 224). The constraints of this particular estimation technique do not allow for an analysis of whether or not greater or lesser amounts of food aid are added into an aid package for countries in the food and economic aid category (I look for evidence of this in the two-stage model, which I describe next). However, this model does allow for some very useful comparisons of the hypothesized legal mechanisms (human rights and sanctions) on the selection of certain countries into one of the three other outcome categories (no aid, food aid only, and other economic aid) relative to those countries that fall into the reference category of both food aid and economic aid.[16] I use robust standard errors clustered by county in my sample to control for heteroscedasticity.

For the two-stage model, as consistent with previous foreign aid literature (Poe and Meernik 1995; Meernik et al. 1998; Zahariadis et al. 2000; Blanton 2005; Drury et al. 2005), I utilize a two-stage Heckman selection equation in order to test for first, policymakers' determination of which countries need food aid assistance and then second, how much food aid assistance those same policymakers allocate to the selected countries (Heckman 1976). Unlike the multinomial logit model, the Heckman model does not allow for the simultaneous testing of my hypotheses on the different categories of aid packages. However, the Heckman model does allow for the testing of the same hypotheses on the amount of food

[13] The inclusion of this variable serves both a theoretical and methodological role.

[14] Temporal dependence in the selection stage of the two-stage model is accounted for with another technique described below (Beck, Katz, and Tucker 1998).

[15] Given an unordered categorical dependent variable of J outcomes, $J - 1$ equations are estimated that show the effects of the independent variables on producing each of the outcomes relative to the remaining base category (Long and Freese 2006: 225). No assumptions are made about the order of the four potential combinations of aid.

[16] The base category can be any of the four potential combinations of aid. Again however, I am particularly interested in comparing the categories of no aid, food aid only and other economic aid to the category of both food aid and economic aid.

aid a recipient country receives while controlling for all other economic aid programs.

The Heckman model represents the two-stage selection process, while controlling for selection bias in the equation of the second step.[17] A selection bias term is computed from the predicted probabilities from the first stage maximum likelihood equation. The bias term or Mills lambda ratio is then used as an independent variable in the second stage equation. This two-stage statistical procedure is necessary because of the non-random selection of food aid recipients from the pool of all countries. This non-random process results in the correlation of the error terms in both the selection and allocation stage, which produces biased and inconsistent estimates in the second equation (Heckman 1976). The Heckman model allows for the error term in the two equations to correlate by normalizing the mean of the allocation stage error to zero. In this way, consistent estimates are produced in the second stage.

To estimate both stages of the Heckman model, the dependent variable takes two forms; food aid is measured dichotomously in the first stage (selection, that is, yes or no) and in the form of the natural logarithm of constant 2004 $US during the second stage (allocation, that is, total amount). I use robust standard errors clustered by country to control for heteroscedasticity. To control for the contemporaneous correlation of residuals, I utilize three natural cubic splines and a counter variable in the selection equation of the model, as recommended by Beck et al. (1998), and a lagged dependent variable in the allocation equation of the model. This approach is most consistent methodologically with the analysis of foreign aid conducted by Lai because the ''inclusion of a lag appropriately deals with autocorrelation by dynamically modeling the autocorrelated process as an independent variable'' (2003: 112). To appropriately estimate the Heckman model at least one variable must be excluded from one of the equations. This exclusion condition is satisfied by excluding the cubic splines and count variable from the second stage equation and by excluding the population variable and lagged dependent variable from the first stage equation.[18] I discuss the results next.

Results

Substitution Model with a Multinomial Logit Equation

Table 1 presents the results from the multinomial logistic regression equation. The table displays results for three of the categories of foreign aid (no aid, food aid only, and economic aid only) compared with the fourth category (food aid and economic aid). The results in the first column estimate the effects of the independent variables on a country receiving no aid compared with those that receive both food and economic aid. The nonlinear relationship between the independent variables and the categorical dependent variable of this model makes the interpretation of these coefficients difficult, especially given the inclusion of the interaction effect in Model 1.2 (Braumoeller 2004; Brambor, Clark, and Golder 2006). However, the direction and statistically significant relationships of several of the hypothesized variables in Model 1.1 provides some initial evidence that foreign aid substitution may indeed be occurring. The negative coefficient on the human rights variable in the first and third columns of Model 1.1 indicates that countries are less likely to receive no form of aid or economic aid only (compared with countries that receive both food aid and economic aid) as the level of human

[17] The Heckman and multinomial logit models I utilize are available in Stata 9.0 (2005).

[18] Several specifications of the models presented below have additional variables excluded from the first stage equation.

TABLE 1. Multinomial logit model of US foreign aid categories, 1990–2004

	No aid vs. food and economic aid	*Food aid only vs. food and economic aid*	*Economic aid only vs. food and economic aid*
	Coeff. (SE)	*Coeff. (SE)*	*Coeff. (SE)*
Model 1.1 ($N = 2{,}531$)			
Human rights (PTS) $t-1$	−0.698 (0.150)***	0.151 (0.148)	−0.132 (0.073)*
Strategic interests (ln military aid)	−0.168 (0.024)***	−0.148 (0.040)***	−0.009 (0.013)
Human rights (PTS) $t-1$ × strategic interests $t-1$			
Sanctions(d) $t-1$	−0.142 (0.703)	−0.550 (0.658)	0.340 (0.216)
Food production (ln cereal per capita kg) $t-1$	−0.009 (0.677)	−2.094 (2.018)	0.637 (0.487)
Drought(d) $t-1$	−0.686 (0.427)	−0.523 (0.560)	−0.198 (0.189)
Purchasing power (ln GDP per capita) $t-1$	0.263 (0.071)***	0.277 (0.076)***	0.204 (0.044)***
Domestic interests (ln $1K food exports) $t-1$	−0.054 (0.023)**	−0.081 (0.028)***	−0.049 (0.012)***
Previous food aid (ln $1K) $t-1$	−0.624 (0.049)***	−0.117 (0.035)***	−0.383 (0.023)***
Constant	3.016 (0.741)***	−1.959 (0.920)**	1.230 (0.382)***
Log-likelihood = −1,680.0157			
$\chi^2 = 616.78$			
Model 1.2 ($N = 2{,}531$)			
Human rights (PTS) $t-1$	−0.711 (0.191)***	0.125 (0.180)	−0.012 (0.090)
Strategic interests (ln military aid)	−0.187 (0.114)	−0.228 (0.152)	0.109 (0.048)**
Human rights (PTS) $t-1$ × Strategic Interests $t-1$	0.099 (0.472)	0.292 (0.572)	−0.495 (0.187)***
Sanctions(d) $t-1$	−0.085 (0.725)	−0.533 (0.646)	0.234 (0.216)
Food production (ln cereal per capita kg) $t-1$	−0.090 (0.680)	−2.119 (2.034)	0.524 (0.480)
Drought(d) $t-1$	−0.708 (0.423)*	−0.511 (0.553)	−0.187 (0.187)
Purchasing power (ln GDP per capita) $t-1$	0.263 (0.071)***	0.272 (0.078)***	0.213 (0.043)***
Domestic interests (ln $1K food exports) $t-1$	−0.055 (0.023)**	−0.081 (0.027)***	−0.052 (0.012)***
Previous food aid (ln $1K) $t-1$	−0.623 (0.049)***	−0.116 (0.035)***	−0.380 (0.023)***
Constant	3.021 (0.775)***	−1.841 (0.999)*	0.980 (0.401)**
Log-likelihood = −1,673.1817			
$\chi^2 = 661.55$			

(*Notes.* All monetary amounts are constant $US 2004. Significance levels: *10%, **5%, ***1%).

rights violations increases. This pair of results presents two somewhat contradictory findings. First, the United States is providing some level of aid to a subset of human rights abusing countries that receive both forms of aid. This result suggests that foreign policymakers may be allocating greater amounts of food aid to countries in this group, while simultaneously allocating smaller amounts of other economic aid. The results obtained from the Heckman model, discussed below, provide evidence to support this possibility. Second, countries with increasing levels of human rights violations are less likely to receive economic aid only when compared with countries that receive both economic aid and food aid. The separation of food aid from other economic aid programs provides some insights into the findings from several recent studies, which reported that an increasing level of human rights abuse restricts the selection of countries to receive total economic aid (any combination of food aid and economic aid) (Meernik et al. 1998; Apodaca and Stohl

1999) and may help to explain why some studies find little evidence of such a relationship (Lai 2003).

The results in the second column estimate the effects of the independent variables on a country receiving food aid only, compared with those that receive both food aid and economic aid. The human rights variable in this comparison group is not statistically significant; however, the small sample size ($N = 45$) means that nearly all countries that receive food aid tend to also receive some other form of economic aid as indicated by the large number of country-year observations in the food aid and economic aid category ($N = 1{,}035$). Again, foreign policymakers may simply be substituting amounts of one form of aid for another; therefore, it is necessary to test my hypotheses on the continuous amount of food aid while accounting for the level of other economic aid and military aid that a potential recipient country receives. Before moving on to the results from the Heckman model I report predicted probabilities for Model 1.2 because of the presence of the interaction term, which were obtained using the Clarify commands in *Stata 9.0* (King, Tomz, and Wittenberg 2000; Tomz, Wittenberg, and King 2003).

The probabilities displayed in Table 2 provide additional evidence that both the level of human rights abuse in a country and the level of US strategic interest, as measured by the receipt of US military aid, condition the use of food aid. The probabilities are computed based on different values of the human rights variable, the strategic interest variable and the interaction term, which is the product of the two independent variables (King et al. 2000; Tomz et al. 2003). All other variables are held constant at their mean or median value. A country measured at the highest level of human rights violations that receives from $\mu + \sigma$ to the maximum value of military aid (probabilities in the lower right of Table 2) has a 56–60% probability of receiving a combination of economic aid and food aid, respectively, whereas a county of similar strategic importance with a low level of human rights abuse has approximately a 55% probability of receiving economic aid only (probabilities in the upper right of Table 2). Interestingly, a high level of human rights violations and a low level of strategic interests (probabilities in the lower left of Table 2) substantially increases the probability of receiving only food aid from less than 3% to approximately 11%, despite the small number of observations in which a country only receives food aid ($N = 45$).

Finally, note that statistically significant differences can be determined by comparing the mean value of interest in a given category with the 95% confidence interval of another value in the same category.[19] For example, take the three bottom most rows in Table 2: there are no statistically significant differences across the economic aid only category when the level of human rights is held constant at its highest value and the level of US military aid is varied. However, there are several such difference across the values in the food aid only and food aid and economic aid categories.

Taken together, these results provide evidence that suggests that food aid is a substitutable option for policymakers when crafting aid packages for countries with high levels of human rights violations. The option of food aid, in tandem with other economic aid options, appears to be allocated to more strategically important countries; however, to better support this inference it is necessary to analyze variations in the amount of food aid allocated to countries while controlling for all other economic aid program options. In the next section I continue to discuss this relationship based on the results obtained from the Heckman selection model discussed above.

[19] Comparisons can be made for values in the same dependent variable category horizontally, vertically and diagonally.

Table 2. Probability of the Four Aid Categories given the Value of Human Rights and Strategic Interests from Model 1.2

Dependent variable		*Pr(Y = j)** [95% CI]**	*Pr(Y = j)* [95% CI]	*Pr(Y = j)* [95% CI]	*Pr(Y = j)* [95% CI]	*Pr(Y = j)* [95% CI]
	IV	*min*	$\mu-\sigma$	μ	$\mu+\sigma$	*max*
No aid	1	0.497 [0.353, 0.635]	0.431 [0.304, 0.562]	0.192 [0.127, 0.281]	0.070 [0.034, 0.125]	0.026 [0.008, 0.060]
Food aid only	1	0.031 [0.006, 0.096]	0.029 [0.007, 0.079]	0.019 [0.008, 0.037]	0.011 [0.004, 0.027]	0.007 [0.001, 0.028]
Economic aid only	1	0.272 [0.176, 0.382]	0.313 [0.217, 0.415]	0.466 [0.386, 0.538]	0.552 [0.464, 0.641]	0.589 [0.456, 0.717]
Food and econ aid	1	0.200 [0.124, 0.302]	0.227 [0.153, 0.326]	0.323 [0.260, 0.393]	0.367 [0.289, 0.448]	0.378 [0.258, 0.508]
No aid	2	0.328 [0.243, 0.423]	0.277 [0.203, 0.360]	0.118 [0.077, 0.168]	0.044 [0.023, 0.075]	0.017 [0.007, 0.036]
Food aid only	2	0.051 [0.016, 0.116]	0.044 [0.016, 0.094]	0.022 [0.012, 0.040]	0.011 [0.004, 0.024]	0.006 [0.001, 0.018]
Economic aid only	2	0.350 [0.274, 0.433]	0.382 [0.311, 0.454]	0.482 [0.429, 0.530]	0.527 [0.467, 0.586]	0.542 [0.450, 0.634]
Food and econ aid	2	0.271 [0.198, 0.351]	0.296 [0.226, 0.376]	0.377 [0.327, 0.433]	0.418 [0.362, 0.475]	0.434 [0.343, 0.525]
No aid	3	0.194 [0.112, 0.294]	0.163 [0.097, 0.244]	0.070 [0.039, 0.114]	0.028 [0.012, 0.055]	0.012 [0.003, 0.031]
Food aid only	3	0.076 [0.035, 0.142]	0.063 [0.031, 0.110]	0.027 [0.015, 0.044]	0.011 [0.004, 0.025]	0.005 [0.001, 0.016]
Economic aid only	3	0.402 [0.328, 0.475]	0.424 [0.358, 0.486]	0.480 [0.431, 0.525]	0.494 [0.434, 0.553]	0.490 [0.399, 0.574]
Food and econ aid	3	0.327 [0.252, 0.408]	0.350 [0.281, 0.423]	0.423 [0.374, 0.474]	0.467 [0.412, 0.524]	0.493 [0.408, 0.578]
No aid	4	0.109 [0.042, 0.208]	0.092 [0.038, 0.172]	0.042 [0.018, 0.082]	0.019 [0.005, 0.048]	0.009 [0.002, 0.032]
Food aid only	4	0.108 [0.058, 0.181]	0.086 [0.050, 0.139]	0.031 [0.016, 0.052]	0.011 [0.003, 0.029]	0.005 [0.001, 0.018]
Economic aid only	4	0.422 [0.329, 0.511]	0.438 [0.353, 0.518]	0.465 [0.401, 0.528]	0.456 [0.372, 0.540]	0.436 [0.313, 0.557]
Food and econ aid	4	0.361 [0.272, 0.456]	0.385 [0.302, 0.470]	0.463 [0.399, 0.525]	0.514 [0.430, 0.593]	0.550 [0.429, 0.669]
No aid	5	0.059 [0.014, 0.151]	0.051 [0.014, 0.119]	0.025 [0.008, 0.059]	0.013 [0.002, 0.041]	0.008 [0.001, 0.031]
Food aid only	5	0.148 [0.074, 0.268]	0.114 [0.062, 0.198]	0.036 [0.016, 0.068]	0.012 [0.002, 0.038]	0.005 [0.000, 0.024]
Economic aid only	5	0.417 [0.297, 0.542]	0.431 [0.321, 0.546]	0.443 [0.355, 0.535]	0.417 [0.298, 0.536]	0.385 [0.229, 0.561]
Food and econ aid	5	0.375 [0.260, 0.503]	0.404 [0.295, 0.521]	0.496 [0.406, 0.586]	0.559 [0.439, 0.665]	0.603 [0.430, 0.757]

(*Notes.* The probabilities (quantities of interest) are computed based on the values of two independent variables (IV), Human Rights (values in the IV column) and Strategic interest (values in the IV row) and an interaction of the two (King et al. 2000). The value of the interaction term is set to the product of the two independent variables of interest. All other variables are set to their mean or median value. *The probability that the dependent variable *Y* takes on one of four unordered categorical values *j*. **Statistically significant differences can be determined by comparing the mean value of interest to the 95% confidence interval of another value in the same category. Note that there are many such statistically significant differences).

Two-Stage Model with a Heckman Selection Equation

Table 3 contains four models that vary by the inclusion of the hypothesized interaction term in the allocation stage and by the inclusion of all the hypothesized variables in the selection stage as well as the inclusion of the interaction term. The results displayed in Table 3 support the main linear-additive human rights hypothesis; increasing violations of human rights in a recipient country plays a statistically significant and substantively meaningful role during the allocation stage. The direction of the relationship indicates that as human rights worsen or as violations of the personal integrity of the individual citizens within a country increase, food aid also increases. For each one-point increase in Human Rights abuse, as measured by the five-point PTS, the amount of food aid increases by approximately 19–21 percentage points. A cursory look at the coefficients and standard errors for Human Rights, Strategic Interests and the multiplicative term suggests that this relationship is not conditional. However, in order to accurately gauge the statistical precision of this conditional relationship, the marginal effects and corresponding standard errors must be calculated (Braumoeller 2004; Brambor et al. 2006). The tests for conditional effects in the second stage equation were statistically insignificant.

I also computed probabilities for the selection stage of Model 3.4, which are similar to those computed from the multinomial logit model and displayed in Table 2. I again computed the quantities of interest based on different values of the human rights variable, the strategic interest variable, and the interaction term. However, the confidence intervals produced around most of these probabilities were extremely wide and no statistically meaningful differences were observed. The hypothesized conditional relationship appears to be absent in decisions when comparing the probability of food aid to no food aid.

Discussion

The four-category variable (no aid, food aid only, economic aid only, or food aid and economic aid) described in the multinomial logit section has provided a much richer view of the conditional relationship of human rights on the selection of different types of aid recipients when compared with the two-category variable (no food aid or food aid) necessary to estimate the Heckman model. To reiterate, the effect of human rights is conditional on the value of the strategic interests variable and much of the change in food aid occurs in the food aid and economic group in the multinomial logit model. This evidence is suggestive of a substitution effect, however, it might also reflect some form of complimentary relationship. The identification of even more fine-tuned distinctions is difficult within the large-*N* research design employed in this study. However, analyzing these other possibilities is essential. Thus, future research may need to use more sophisticated research designs such as a treatment effects model or strategic interaction model to further tease out these relationships.

I had expected that sanctions would follow the same underlying logic that links increasing allocations of food aid with increasing violations of human rights because sanctions legally constrain the foreign aid options available to decision makers just as the human rights restrictions within US foreign aid legislation. However, the results from the multinomial logit models and the Heckman models fail to provide any support for this hypothesis.[20] Nonetheless, US sanctions are still an important policy tool that have been regularly employed by US decision makers. While the results of my analysis indicate that sanctions are

[20] In a few alternatively specified robustness tests this relationship did achieve nominal significance.

Table 3. Heckman Two-Stage Model of US Food Aid Selection and Allocation, 1990–2004

	Model 3.1	*Model 3.2*	*Model 3.3*	*Model 3.4*
	Coeff. (SE)	*Coeff. (SE)*	*Coeff. (SE)*	*Coeff. (SE)*
Stage 1: Food aid selection (yes or no)				
Human rights (PTS) $t-1$		0.068 (0.041)*		0.018 (0.051)
Strategic interests (ln military aid)	−0.008 (0.007)	−0.010 (0.007)	−.008 (.006)	−0.062 (0.028)**
Human rights × strategic interests				0.211 (0.106)**
Sanctions $t-1$		−0.173 (0.119)		−0.135 (0.120)
Economic aid (ln)	0.046 (0.009)***	0.045 (0.009)***	0.043 (0.008)***	0.047 (0.009)***
Food production (ln cereal per capita kg) $t-1$	−0.562 (0.240)**	−0.507 (0.242)**	−0.559 (0.241)**	−0.456 (0.245)*
Drought $t-1$	0.046 (0.106)	0.044 (0.105)	0.056 (0.106)	0.040 (0.106)
Purchasing power (ln GDP per capita) $t-1$	−0.115 (0.031)***	−0.111 (0.030)***	−0.122 (0.030)***	−0.116 (0.029)***
Domestic interests (ln $361K food exports) $t-1$	0.037 (0.007)***	0.037 (0.007)***	0.037 (0.007)***	0.038 (0.007)***
Counter	−0.810 (0.059)***	−0.806 (0.059)***	−0.813 (0.059)***	−0.805 (0.059)***
Spline1	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Spline2	−0.040 (0.005)***	−0.040 (0.005)***	−0.040 (0.005)***	−0.040 (0.005)***
Spline3	0.005 (0.001)***	0.005 (0.001)***	0.005 (0.001)***	0.006 (0.001)***
Constant	0.670 (0.233)***	0.519 (0.262)**	0.688 (0.232)***	0.609 (0.257)**
Stage 2: Food aid allocation (ln $361K)				
Human rights (PTS) $t-1$	0.199 (0.064)***	0.210 (0.066)***	0.247 (0.090)***	0.250 (0.092)***
Strategic interests (ln military aid)	0.007 (0.012)	0.006 (0.012)	0.065 (0.069)	0.055 (0.069)
Human rights × strategic interests			−0.227 (0.255)	−0.192 (0.257)
Sanctions $t-1$	0.253 (0.163)	0.226 (0.170)	0.216 (0.166)	0.195 (0.172)
Economic aid (ln)	0.042 (0.015)***	0.042 (0.015)***	0.040 (0.015)***	0.041 (0.015)***
Food production (ln cereal per capita kg) $t-1$	1.435 (0.524)***	1.438 (0.525)***	1.398 (0.512)***	1.408 (0.514)***
Drought $t-1$	0.505 (0.106)***	0.504 (0.106)***	0.515 (0.106)***	0.513 (0.106)***
Purchasing power (ln GDP per capita) $t-1$	−0.203 (0.053)***	−0.203 (0.052)***	−0.198 (0.052)***	−0.198 (0.052)***
Domestic interests (ln $361K food exports) $t-1$	0.095 (0.013)***	0.096 (0.013)***	0.094 (0.013)***	0.094 (0.013)***
Previous food aid (ln $361K) $t-1$	0.084 (0.012)***	0.084 (0.012)***	0.083 (0.012)***	0.084 (0.012)***
Population (ln) $t-1$	0.155 (0.054)***	0.155 (0.054)***	0.159 (0.056)***	0.158 (0.056)***
Constant	10.521 (0.845)***	10.485 (0.847)***	10.374 (0.897)***	10.351 (0.897)***
Rho	0.325 (0.070)***	0.336 (0.071)***	0.326 (0.070)***	0.341 (0.068)***
Sigma	0.250 (0.045)***	0.251 (0.045)***	0.248 (0.046)***	0.249 (0.046)***
N	2,531	2,531	2,531	2,531
Log-likelihood	−2,528.717	−2,526.09	−2,527.305	−2,521.637
χ^2	323.65	321.91	313.04	312.48

(*Notes.* All monetary amounts are constant $US 2004. Significance levels: *10%, **5%, ***1%).

statistically unlikely to affect the selection and allocation of food aid this policy choice may still play an important role in other foreign policy behaviors.

Finally, the results of the two-stage model support the main findings of previous food aid research. Food production, and purchasing power in addition to domestic interests inform US foreign policymakers during the selection stage of the food aid distribution process (Zahariadis et al. 2000; Barrett and Heisey 2002; Neumayer 2005). The recipient country's population size (Neumayer 2005), the presence of drought and the amount of previous food aid received (Barrett and Heisey 2002), in addition to food production, purchasing power, and domestic interests, inform US policymakers during the allocation stage. To ensure that the theoretical differentiation of the two-stage food aid process is appropriate and the model correctly specified, I tested for the possibility of a relationship between food aid and democracy, using the Polity IV combined Polity2 variable (Marshall, Jaggers, and Gurr 2003), which I included in both stages of the models. The inclusion of these variables did not consistently alter the substantive findings of the models presented above.

Conclusion

The results demonstrate over a robust set of models that as human rights on the ground worsen, the probability for a state to be selected into the food aid recipient pool increases and, once selected, so too does the allotment of food aid. The needy people provision in the US foreign aid legislation seems to allow foreign policymakers a degree of leeway probably not found with other economic aid programs when crafting food aid packages. The results from the multinomial logit models suggest that the conditional relationship between human rights and strategic interests is an important part of the determination of the type of foreign aid that a country receives. The results from the Heckman model, however, suggest that the conditional relationship between human rights and strategic interests does not affect the allocated amount of food aid; however, the linear-additive effect of human rights is substantively important during this stage.

The four-category distinction of foreign aid (no aid, food aid only, economic aid only, or food aid and economic aid) has provided a rich view of the conditional relationship of human rights on the selection of different types of aid recipients when compared with the two-category distinction. To reiterate, the main hypothesized relationships are substantively and statistically important in determining the probability of a state receiving one of the four combinations of aid in the multinomial logit model; however, these relationships are not statistically important in determining the probability of food aid or no food aid in the first stage of the Heckman model. This difference suggests that a simple increase in the complexity of how foreign aid is conceptualized will allow for the discovery of previously unobserved relationships.

Overall, the results from both models have shed some light on policy outcomes that emerge from a complicated, interdependent decision-making process. Nonetheless, the policymaking picture is, at best, still incomplete. For example I have not accounted for the varying interests and strategic interaction of the USAID, Department of Agriculture, Department of State, Department of the Treasury, Congress and the President in my theory or models. How does the strategic interaction of these competing groups change depending on the foreign policy output in question? How does this competition influence the crafting of aid packages? Finally, the puzzle of which aid options are more or less restricted than others and what types of mechanisms cause such restrictions are still open research questions. Again, the evidence obtained in this study is suggestive of a substitution effect; however, to answer these questions and to integrate the

findings from this study and other foreign policy research[21] future studies would be enhanced by the use of more sophisticated research designs such as nonparametric matching as recommended by Ho, Imai, King, and Stuart (2007) or strategic interaction models as recommended by Braumoeller (2003). Untangling the varied purposes of these programs, while difficult, will provide a much more nuanced understanding of the US aid giving process and enhance efforts to integrate the findings of existing foreign policy research.[22] Furthermore, such information would allow for better coordination between governments and NGOs to food-related crises such as those that occurred around the world in early 2008. At the very least, such information may allow NGOs to anticipate donor behaviors towards specific countries under specific conditions.

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[21] On the competition over foreign policy outputs among these many groups, see Christensen (2000), Diven (2001, 2006), Lancaster (2007); on the competition between Congress and the President, see McCormick and Wittkopf (1990), Meernik (1993, 1994, 1995), Fordham (1998, 2008), Meernik and Oldmixon (2004), Howell and Pevehouse (2005); and on the influence of foreign policy on decision making in domestic courts, see Rosenblum and Salehyan (2004), Collins, Norton, Manning, and Carp (2008), Salehyan and Rosenblum (2008), Rottman et al. (2009) and on the influence of domestic courts on foreign policy, see King and Meernik (1999) and Putnam (2009).

[22] On additive and integrative cumulation, see Zinnes (1976).

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